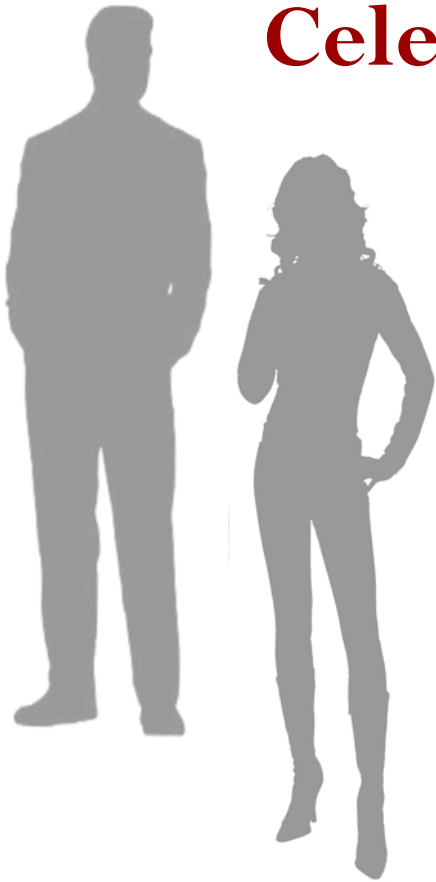


Celebrating Student and Faculty/Staff Collaborations



Tuesday, March 30, 2010
Student Union, 2nd Floor



Presentations and Posters

2:00 - 4:30

Reception and Recognition

4:30 - 5:00

Come and go as your schedule allows!
Refreshments provided throughout the event.

Celebrating Student and Faculty/Staff Collaborations
focuses on the valued tradition at St. Norbert College of
collaborations taking place in labs, studios, and other scholarly
or creative settings, resulting in a rich array of
scholarly research and creative works.

This celebration features collaborative projects that evolved
out of independent studies, class assignments, and casual
interactions, as well as those collaborations supported through
Student-Faculty Development Endowment Grants or
the Research Fellows Program.

*Co-sponsored by the
Office of Faculty Development
and the
Office of the Dean of the College*

On behalf of the
Office of Faculty Development
and the
Office of the Dean of the College,
we extend

A Big Thank You to:

All Participating Student, Faculty and
Staff Collaborators

Copy Center

Conference and Event Services

And We Especially Thank:

Stephanie Schauer ('10)
Faculty Development Office Assistant
Lead Student Organizer of this Event

Sarah Volpintesta ('12)
Faculty Development Intern

Niki Nelson ('13)
Faculty Development Office Assistant

*for consistently practicing a high level of professionalism
and foresight in the preparation for and execution of this
event, making it possible for this Celebration to take place.*

This program is put together listing oral presentations by time, then posters and other exhibits in alphabetical order by the project title. Time(s), location and presentation type are listed along with collaborator names, titles, project title and abstract. Oral presentations and performances will occur during the time listed. Posters and other exhibits will be displayed from 2:00 - 5:00 p.m., but are listed according to the time(s) members will be available to discuss their projects.

A list of all students and faculty/staff participating in *Celebrating Student and Faculty/Staff Collaborations* is available on pages 4 and 5, along with the page numbers where you can find their projects. Some students and faculty/staff may be involved in multiple projects or presenting their project more than once.

Student Participants

Ashley Ash	24	Brieanne Oehlke	24
Nicole Bader.....	19	Gretchen Panzer.....	11
Isabella Benassi	15	Melissa Patz	26
Cheryl Bonlender	28	Chelsea Pintz	9
Matthew Bougie	19	Michael Poradek	16
Chase Brosseau	10, 25	Nicole Portman	6
Haoqi Chen.....	13	Chelsea Potier	13
Siraya Chew	17	Faith Price.....	14
Sara Coursin	18	Izzy Rauguth.....	15
Kayla Dingeldein.....	14	Jacob Reisner	12
Stefanie Domrois.....	26	Jessica Richards.....	7
Rongyi Du	6	Stephanie Schauer.....	26
Rachel Erickson.....	12	Kevin Steiner	8, 21
Billy Fischer	13	Danielle Strenski.....	6
Kiernan Folz-Donahue	19	Kristen Susienka	7
Austin Gabrielse.....	10	Nikki Swanson.....	27
Stephanie Haines	6	Leah Tabbert	25
Beth Holt	18	Tyler Thomas	15
Lauren Hughes	6	Adam Van Fossen	28
Connie Humann.....	14	Matthew Van Lanen.....	27
Joseph Jones	16	Corey Vorland	26
Kimberly Keil.....	8, 15	Travis Vroman	8
Ian Kline.....	27	Laura Welsing	28
Emily Klug	20	Marcus Wendricks	23
Bill Lancelle	20	Renee Wenig	17
Sarah Lottes.....	22	Simon Wolberg	9
Christopher Mader	21	Ashley Wong.....	12
Kyle Manderscheid	8	Jia Yao.....	22
Tony Matthys.....	10	Stephanie Zellner	9
Doug Obermann	14		

Faculty/Staff Participants

Deborah Anderson	8, 18, 18, 24
David Bailey	9, 12, 20, 22, 24
Teena Carroll.....	13
Anindo Choudhury	10, 25
Kari Cunningham.....	27
Jerry Donahue	16
Russ Feirer	15
Tim Flood.....	13, 19, 26
John Frohlinger	15, 28
Wolfgang Grassl.....	16
James Hodgson	10, 10
Nicolas Humphrey	9
David Hunnicutt.....	12, 17, 22
William Hynes	27
Stuart Korshavn	21
Terry Jo Leiterman.....	26
Linda McKeag	14
Yoko Mogi-Hein	6
James Neilson	19, 23
Emanuel Oliveira	8
John Pennington.....	11
Kevin Quinn.....	21
Edward Riden	7
Shane Rocheleau.....	28
Jason Senjem.....	7
Matthew Stollak	14
Takamasa Takahashi	6, 20
Beth Tarasawa	14
Michelle Tichy	17, 25
Amy Vandenberg	14

3:00-3:15

201 BC

Oral Presentation

Stephanie Haines, Junior Education Major
Lauren Hughes, Junior Education Major
Danielle Strenski, Junior Education Major
Nicole Portman, Senior Business Administration Major
Yoko Mogi-Hein, Adjunct Assistant Professor of Education

SOCIAL INEQUALITIES (GENS408) RACE AND MINORITY RELATIONS SMALL GROUP PROJECT

As a part of their course work, a group of students from J-term, 2010 choose this assignment for their capstone seminar titled, Social Inequalities: Race and Minority Relations(GENS408-GS12). The Hispanic population is the fastest growing ethnic minority group in the United States. The group study examines the significance of this rapidly growing population of Spanish-speaking, Hispanic American citizens, and the development of equal opportunity to political and rights-based processes.



3:15-3:30

201 BC

Oral Presentation

Rongyi Du, Senior Mathematics Major
Takamasa Takahashi, Assistant Professor of Physics

AN ELEMENTARY CALCULATION OF GRAVITATIONAL DEFLECTION OF LIGHT AND OF TIME DELAY USING OPTICAL ANALOGY

We calculate general relativistic deflection and time delay of light propagation using the optical analogy method, in which a spherically symmetric gravitational field is represented by an optical medium. The calculation is based on the light path obtained from Snell's law in geometrical optics. We present results in the weak-field approximation appropriate for a normal star like the sun. The use of Snell's law allows for easy visualization and the widest accessibility of these important results of general relativity.

3:30-3:45

201 BC

Oral Presentation

Kristen Susienka, Senior English Major
Edward Ridsen, Professor of English

PROFESSIONALIZING THE ENGLISH MAJOR: EDITING AND PUBLISHING

What skills can a student acquire and shape to prepare to move from the classroom to professional work in editing and publishing? Academic and internship experience may be gained to establish a path to career possibilities. Necessary or useful skills include such mundane knowledge as immaculate grammar and punctuation practices, but one must also acquire awareness of the publishing industry from books to journals to electronic sources, through such means as information interviews and actual practice with professional texts. This paper will discuss various training procedures and experiences that faculty and students can share to situate the student amidst a continually growing and changing industry.

3:45-4:00

201 BC

Oral Presentation

Jessica Richards, Sophomore Biology and Environmental Science Major
Jason Senjem, Assistant Professor of Business Administration

SHADES OF GREEN: ENTREPRENEURIAL INFLUENCES ON ENVIRONMENTAL PRACTICE ADOPTION

Many organizations have been making a commitment to adopt environmental practices as part of sustainability efforts in their organizations. However, some of these organizations are finding that it is more difficult than originally considered. We propose that entrepreneurial behavior will be able to explain the variance in the progress of environmental practice adoption in organizations. To examine this question, we are conducting a survey on a sample of 656 colleges and universities that have signed a commitment to address environmental issues. Our data collection includes phone interviews, a survey, and the information provided on college websites and written sustainability plans. This study will advance our understanding of how successful adopters are able to overcome challenges and help define what role entrepreneurial behaviors play.

4:00-4:15

201 BC

Oral Presentation

Kyle Manderscheid, Senior Mathematics Major
Kevin Steiner, Senior Accounting and Economics Major
Travis Vroman, Senior Computer Science and Economics Major
Emanuel Oliveira, Visiting Assistant Professor of Economics

iOMe: SUGGESTIONS FOR THE SUSTAINABILITY OF THE U.S. RETIREMENT SYSTEM

This project was entered in to the iOMe Challenge, created and supported by a group of concerned businesses and organizations, to solve several issues pertaining to the current U.S. retirement crisis. The project proposed the following: a) limit Social Security payments to the top 10% of the age distribution; b) index COLA to CPI; c) increase the number of H1B visas to augment tax revenues; d) make the PBGC independent from Congress to allow for realistic insurance rates and foster the adoption of defined contribution pensions; e) better tax treatment and improved reporting requirements for pensions; f) require financial classes at high schools and colleges; g) have the Federal government provide additional funds to young adults who start a personal retirement account. This project, representing St. Norbert College, received honorable mention in the iOMe Challenge.

2:00-2:30

Lounge

Poster

Kimberly Keil, Senior Biology Major
Deborah Anderson, Associate Professor of Biology

A TAXONOMIC REVISION AND CHARACTERIZATION OF *THISBEMYS* (RODENTIA; ISCHYROMYIDAE) FOUND WITHIN THE BRIDGER FORMATION, WYOMING

A study of the evolutionary changes of *Thisbemys* recovered from the Bridger Basin in Wyoming has revealed five species throughout Br1-Br3. A coefficient-of-variation test and bivariate plots of log-transformed tooth area vs. biostratigraphic level and length vs. width metrics were used to confirm more than one species was present in Br1-Br3. The morphology of upper and lower molars and incisors were used to classify each specimen. The species present are *Thisbemys corrugatus*, *T. perditus*, *T. plicatus*, *T. nini*, and *T. brevicrista*. Our identification of *T. nini*, *T. perditus*, and *T. brevicrista* are the first findings of these species within Br2.

2:30-3:00

Lounge

Poster

Simon Wolberg, Foreign Language Teaching Assistant in German, pursuing M.A. in English and Georgraphy at the Westfälische Wilhelms-Universität, Münster, Germany

Nicolas Humphrey, Assistant Professor of German and Humanities

COMMUNICATIVE SKILLS IN EARLY COLLEGE-LEVEL GERMAN COURSES

This collaboration diagrams and analyzes the study of college-level German language courses focusing on four main areas. The first area focused on an overview of the course and its participants (first-year college students). The second and third areas looked at specific topics that capture student interest and how communication is incorporated and assessed, and if American Council of the Teachers of Foreign Languages Proficiency Guidelines are a point of reference. Finally, the project looked at the kinds of assignments a student will encounter.

3:00-3:30

Lounge

Poster

4:00-4:30

Lounge

Poster

Chelsea Pintz, Junior Biology Major

Stephanie Zellner, Senior Biology and Psychology Major with Biomedical Concentration

David Bailey, Assistant Professor of Biology

DETERMINATION OF THE AFFERENT, AROMATASE-PRODUCING CELLS IN THE ZEBRA FINCH HVC

Aromatase is an enzyme that converts testosterone into estrogen, a hormone important in brain processes like sexual differentiation, neuroprotection, and memory. Songbirds like the zebra finch use memory for song learning, recognition, and production. An area essential in song production is called HVC. In HVC, aromatase is found at the ends of axons but not in neuron cell bodies, suggesting that cells capable of providing estrogen to HVC come from other brain areas. The identity of these areas was the focus of this project, results were determined by injection of a tracer into the HVC followed by the co-labeling of aromatase.

2:00-2:30

Lounge

Poster

Tony Matthys, Biology Major (graduated December, 2010)

Jim Hodgson, Professor of Biology

DIET CHANGES IN PUMPKINSEED SUNFISH IN RESPONSE TO INCREASED PISCIVORY

Dietary response of pumpkinseed sunfish to largemouth bass piscivory was monitored. Bass were added twice to Peter Lake during 2009. Mean percent mass of zooplankton was 52% before the first bass addition, then dropped to 5% afterwards. Following the second addition, the mean percent mass recovered slightly to 16%. Before the first bass addition, the percentage of zooplankton by count was 84%, but after the first addition the mean percentage decreased to 45%; then recovered to 70% after the second addition. Also, prey composition changed where pelagic zooplankton, *Bosmina* and copepods, decreased from >95% to <31%, and chydorids (a littoral cladoceran) increased from 0.02% before the first bass addition to >43% after the second bass addition. This suggests a piscivore induced risk behavior change in pumpkinseeds as they shift from the pelagic zone to the littoral zone.

3:00-4:00

Lounge

Poster

4:00-4:30

Lounge

Poster

Chase Brosseau, Junior Biology Major

Austin Gabrielse, Senior Biology Major

Anindo Choudhury, Associate Academic Dean and Associate Professor of
Biology and Environmental Science

James Hodgson, Professor of Biology

DIET ELECTIVITY IN FIVE SPECIES OF FISH FROM THE WEST TWIN RIVER, WISCONSIN

We monitored diet electivity of five species of fishes of several trophic guilds (a sculpin, darter and three minnow species) from the West Twin River in Northeastern Wisconsin. Creek chub (*Semotilus atromaculatus*) was the most selective feeder foraging on only two diet categories and the common shiner (*Notropis cornutus*) was the most generalist forager preying on all five diet categories. Order Diptera was the most abundant zoobenthos and was selected most often.

3:30-4:00
4:00-4:30

Lounge
Lounge

Computer Presentation
Computer Presentation

Gretchen Panzer, Sophomore English, and Women's and Gender Studies Major
John Pennington, Professor of English

**DIGITIZING *NORTH WIND*: CREATING A SCHOLARLY DATABASE
FOR GEORGE MACDONALD STUDIES AND PUBLISHING A CRITICAL
ARTICLE ON THE EVOLUTION OF MACDONALD CRITICISM IN
*NORTH WIND***

Our project aims to create an international research database for the study of George MacDonald (1824-1905), Victorian author, who wrote in a variety of genres: realistic novel, sermon, literary and cultural criticism, children's realistic fiction, poetry, fairy tale, and fantasy literature. This project is in its second year. We began by digitizing all back issues of *North Wind: A Journal of George MacDonald Studies* (John Pennington is current editor of the journal) and we are in the process of creating a standard format for every article. Our goal is to create a research database for MacDonald scholars. Once we complete the digitization of the journal (24 issues), we will link to the MLA International Bibliography, the Victorian Web, and the George MacDonald Society webpage to create the most comprehensive database available for MacDonald scholars around the world. In addition to the scholarly database, we are writing an academic article that traces the evolution of MacDonald scholarship, from early biographical students of the author to more contemporary criticism that embraces a variety of theoretical approaches, including feminist and gender criticism, cultural studies, theological exegesis, and Lacanian psychoanalysis.



3:00-3:30

Lounge

Poster

Jacob Reisner, Senior Biology Major with Biomedical Concentration
David Hunnicutt, Assistant Professor of Biology

EFFECT OF *FLAVOBACTERIUM COLUMNARE* MOTILITY ON GROWTH RATE AND VIRULENCE IN ZEBRAFISH

The organism *Flavobacterium columnare* causes columnaris disease in fish. *F. columnare* move by gliding motility, and motility may affect virulence in fish. The (gldJ-) gene knockout mutant of *F. columnare* lacks proteins needed for gliding motility. A comparison of the mutant strain of *F. comlumnare* to a wild type strain in zebrafish infection trials shows the effect of motility on *F. columnare* virulence. Difficulty in interpreting the infection data may be due to difference in growth rates characteristic between the strains. We calculated growth curves and found that the doubling time for the wild type was 40.18 hours, and the doubling time for the mutant was 36.06 hours, and differences in biofilm formation late in growth that may influence virulence data.

3:30-4:00

Lounge

Poster

4:00-4:30

Lounge

Poster

Rachel Erickson, Junior Biology Major with Biomedical Concentration
Ashley Wong, Junior Biology Major with Biomedical Concentration
David Bailey, Assistant Professor of Biology

EXAMINATION OF THE ORIGINS OF HIPPOCAMPAL AROMATASE IN ZEBRA FINCHES

The hormone estrogen, synthesized from testosterone by the enzyme aromatase, plays a key role in the brain and especially the hippocampus, an area responsible for a particular type of memory. In zebra finches, for example, estrogen accelerates hippocampal-dependent memory consolidation and increases the size of hippocampal cells. Aromatase can be found at the ends of hippocampal neurons but, curiously, not in the bodies of the neurons themselves where it is likely generated. Our study aimed to find the source of hippocampal aromatase by further determining inputs (with a retrograde tracer) to the structure coupled with double-labeling for aromatase via immunohistochemistry.

3:00-3:30

Lounge

Poster

Haoqi Chen, Sophomore Physics and Mathematics Major
Teena Carroll, Assistant Professor of Mathematics

EXTENDING BALANCING PAIRS TO SEQUENCES

We will call a pair (a, b) of real numbers a balancing pair if $ab = a + b$. We can extend any such pair to a triple by finding the unique number c so $abc = a + b + c$. This suggests a recursively defined sequence where the next term is the unique number which will “balance” the terms already in the sequence. We will present connections between these sequences and an Egyptian algorithm as well as discuss connections between sequences formed in this way and several other sequences of mathematical interest.

2:00-2:30

Lounge

Poster

2:30-3:00

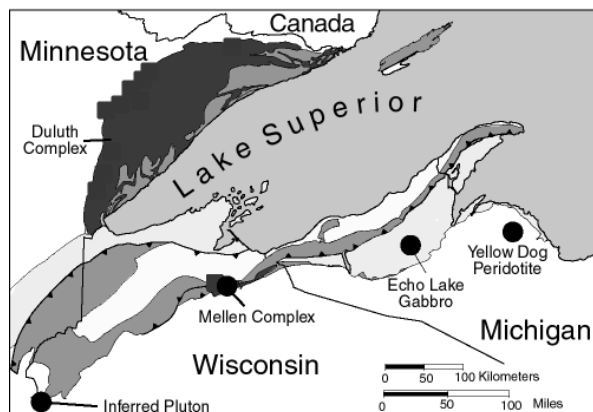
Lounge

Poster

Billy Fischer, Sophomore Geology Major
Chelsea Potier, Junior Math and Geology Major
Tim Flood, Professor of Geology

GABBROIC XENOLITHS IN A GRANITIC MATRIX FROM 1.1 BILLION YEAR OLD ROCKS NEAR MELLENN, WISCONSIN

The Mellen Complex, located near Mellen, Wisconsin, is part of the 1.1 billion year old Mid-Continent Rift System and contains gabbroic xenoliths in a granitic matrix. The purpose of this investigation was to characterize and interpret the nature of the interaction of these rocks. The



rocks were analyzed via outcrop, hand sample, and thin section descriptions as well as XRF geochemical analysis. Interpretation of rock descriptions indicates that the granite intruded the gabbro, though stopping once the gabbro had cooled. Inclusion of tourmalines in the granites suggests that the granites are S-type. Geochemical analysis was inconclusive.

4:00-4:30

Lounge

Poster

Doug Obermann, Senior Business Administration Major
Linda McKeag, Visiting Instructor of Accounting
Matthew Stollak, Assistant Professor of Business Administration
Amy Vandenberg, Assistant Professor of Business Administration

GPS IN THE CLASSROOM: USING RUBRICS TO INCREASE STUDENT ACHIEVEMENT

Can the use of rubrics sharpen student focus and thereby increase achievement? Will the use of rubrics help students to prioritize their time, using time more efficiently when completing homework? This study examines grade differences between accounting students given a rubric to assist them in honing in on the specifics of a financial analysis project versus students who are not given the rubric. We will discuss our successes and “ah ha” moments as they relate to our realizations of how we needed to change our approach to communicating, teaching, and grading. We will suggest possible options for professors to adapt their grading policies to help students develop the skills necessary to be successful in the college environment.

3:00-3:30

Lounge

Poster

3:30-4:00

Lounge

Poster

4:00-4:30

Lounge

Poster

Kayla Dingeldein, Sophomore Sociology Major with Human Services Concentrate
Connie Humann, Sophomore Sociology Major with Human Services Concentrate
Faith Price, Junior Sociology Major with Human Services Concentrate
Beth Tarasawa, Assistant Professor of Sociology

HOW DOES A STUDENT’S RELIGION AND/OR SPIRITUALITY AFFECT THEIR SOCIAL BEHAVIOR?

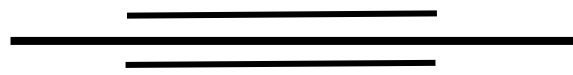
While recent sociological research shows a decline in religiosity among college students (Lee 2002), our study suggests that the influence of religion remains a predictor of social behavior, though this appears to be an indirect relationship. Using survey methods, we investigate the influence of self-reported levels of religiosity on smoking, drinking, and sexual behavior of college students in a small liberal arts college. We find that while individual behavior was not impacted by religious beliefs, the self-reported influence of religion on social behavior was negatively associated with smoking, drinking, and sexual behavior.

2:00-2:30	Lounge	Poster
2:30-3:00	Lounge	Poster
3:00-3:30	Lounge	Poster

Isabella Benassi, Sophomore Biology Major
Kimberly Keil, Senior Biology Major
Izzy Rauguth, Junior Biology Major
Russ Feirer, Associate Professor of Biology

INDUCTION OF APOPTOSIS IN NEUROBLASTOMA AND BREAST CANCER CELL LINES BY RESVERATROL AND DCA

The induction of apoptosis in cancer cells is an active area of cancer research and treatment. Naturally occurring compounds like resveratrol, found in red wine, and dichloroacetate (DCA) have the potential to induce apoptosis without harming healthy cells and may provide alternate therapy for cancer patients. Resveratrol has previously been shown to induce apoptosis in human neuroblastoma (SKNAS) and breast cancer (MCF-7) cell lines, while effects of DCA are less studied. In our studies, cell proliferation, viability, apoptosis, and metabolic assays were performed on resveratrol and DCA-treated cells. These compounds led to a decrease in cell number and viability in both cell lines. Apoptosis was induced, and the metabolism of the cells was also altered.



2:00-2:30 Lounge Poster

Tyler Thomas, Senior Mathematics Major with Secondary Education Certification
John Frohlinger, Associate Professor of Mathematics

INTEGER SUMS OF PYTHAGOREAN TRIPLES

A Pythagorean triple consists of three positive integers a , b , and c that satisfy the equations $a^2 + b^2 = c^2$. The most familiar Pythagorean triple is probably $a = 3$, $b = 4$, $c = 5$. The sum of these three numbers is $a + b + c = 3 + 4 + 5 = 12$. We will address the question: For any positive integer n , does there exist a Pythagorean triple a , b , and c such that $a + b + c = n$? We will solve this problem and demonstrate a strategy for determining a , b , and c from n .

3:00-3:30

Lounge

Demonstration/Performance

Joseph Jones, Junior Personal Major in Entrepreneurship
Wolfgang Grassl, Associate Professor of Business Administration

INTEREST IN ENTREPRENEURSHIP AMONG STUDENTS OF ST. NORBERT COLLEGE

Entrepreneurship is often mentioned as a possible growth area for programs at St. Norbert College. This project conducts a survey measuring the extent of interest in becoming an entrepreneur among the student body. The explanatory model will be informed by existing studies conducted elsewhere, and data collection will be randomized to the maximum extent possible. The study will identify the most important “drivers” of entrepreneurial inclinations and classify them by certain demographic characteristics. The result is meant to provide the College with a basis for deciding how better to develop this area of study.



2:30-3:00

Lounge

Poster

Michael Poradek, Junior Political Science Major
Jerry Donahue, Director of Career Services

LIFE – FINANCIAL LITERACY PROGRAM

The game of LIFE was a financial literacy and educational program presented this year to First Year Experience students through Career Services. The goal of the project was to provide students with a memorable, enjoyable activity that would require critical thinking on financial literacy and money management during their years at St. Norbert College. Through the game, students were given the opportunity to see how much they were spending and how to budget in various areas of the college experience.

4:00-4:30

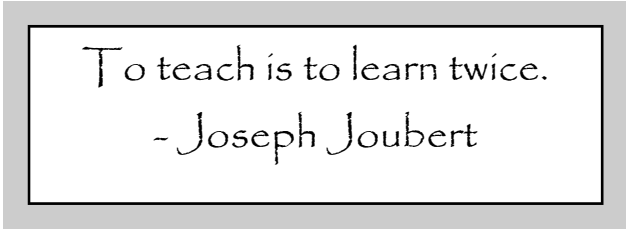
Lounge

Poster

Siraya Chew, Senior Education Major
Michelle Tichy, Assistant Professor of Education

NARRATIVE INVESTIGATION OF THE IMPACT OF A PRE-SERVICE TEACHER'S EXPERIENCE WITH DIFFERENTIATION

How to teach and reach the needs of all children in a pre-service teacher's classroom is a challenge for any pre-service teacher. This study highlights a case of pre-service teaching in a fully collaborative (special and regular education) kindergarten classroom. The differentiation methods available in a kindergarten classroom were examined and the most effective strategies were illuminated. Critical challenges presented to a teacher (pre-service or beyond) in a fully collaborative classroom were also brought to light.



To teach is to learn twice.
- Joseph Joubert

3:00-3:30

Lounge

Poster

Renee Wenig, Junior Biology Major with Biomedical Concentration
David Hunnicutt, Assistant Professor of Biology

NASAL CARRIAGE OF *STAPHYLOCOCCUS AUREUS* IN A POPULATION OF COLLEGE STUDENTS

Staphylococcus aureus is a Gram-positive bacterium that is a potential pathogen, but is also commonly carried by healthy individuals with no symptoms. In this experiment, individuals streaked a nasal swab onto a plate of selective media from which *S. aureus* could be isolated. We then investigated whether these specimens were resistant to a selection of antibiotics using antibiotic disk diffusion. Tracking antibiotic resistance in microorganisms is important when treating individuals with bacterial infections. Prior studies have shown that most antibiotic resistant strains of *S. aureus* are centered around hospitals. A questionnaire was distributed to participants in this experiment in order to establish potential risk factors of being a carrier of *S. aureus*. Further analysis of *S. aureus* strains found is ongoing to discover both levels of antibiotic resistance and risk factors associated with them.

3:00-3:30

Lounge

Poster

Sara Coursin, Sophomore Biology Major
Deborah Anderson, Associate Professor of Biology

NEW SPECIMENS OF *SCIURAVIS BRIDGERI* AND *SCIURAVIS EUCRISTADENS* (RODENTIA; SCIURAVIDAE) FROM THE EARLY EOCENE LYSITE MEMBER, WIND RIVER FORMATION OF WYOMING

New specimens of *Sciuravis bridgeri* and *S. eucristadens* have been recovered from the Early Eocene Lysite Member, Wind River Formation, Wyoming. These two species are part of a group of small rodents that were one of the dominant groups of North American Eocene mammals, a group that gave rise to pocket gophers. The genus *Sciuravus* is a problematic one for taxonomic identification because of the considerable morphological diversity within species. We have described the specimens in detail and taken measurements that will be used by future workers when identifying small rodents of the Wind River Basin fauna.

3:30-4:00

Lounge

Poster

Beth Holt, Senior Biology Major
Deborah Anderson, Associate Professor of Biology

NEWLY DISCOVERED LOWER MOLARS OF *THISBEMYS BREVICRISTA* (RODENTIA; ISCHYROMYIDAE) FROM THE BRIDGER FORMATION OF THE GREEN RIVER BASIN, WYOMING

The Eocene rodent *Thisbemys brevicrista* was originally described based only on upper molars and maxillary fragments. Newly recovered specimens from the Bridger Basin, Wyoming, include mandibular fragments, incisors, and lower molars with the distinctive drainage basin patterned enamel characteristic of *T. brevicrista*. This is the first discovery of lower molars for this species that is intermediate between two co-occurring species, *Thisbemys plicatus* and *Thisbemys corrugatus*. Prior to our study, only two species of *Thisbemys* were known to occur at Br2. Our discovery shows that at least three species lived during the middle Eocene of the Bridger Formation.

3:30-3:30

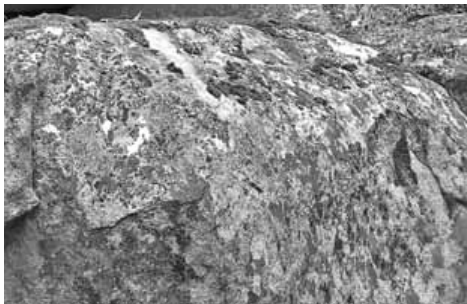
Work of Art

Jeanne M. Godschalx Gallery—Bush Art Center

Matthew Bougie, Senior English Major
James Neilson, Assistant Professor of Art

OLD, COLD WORDS

Old, Cold Words is a mixed-media sculpture composed of a 1947 Kelvinator refrigerator, books, and original verse. The refrigerator and all of the books were found at St. Norbert College and considered “obsolete” (and, therefore, no longer useful to the College community). The placement and alteration of the books within the refrigerator inspired both the placement and creation of the text inscribed on the interior door. “Obsolescence” and “uselessness” are themes addressed in this work.



3:30-4:00



Lounge

Poster

Nicole Bader, Junior Geology Major
Kiernan Folz-Donahue, Junior Geology Major
Tim Flood, Professor of Geology

PETROLOGICAL ORIGINS OF THE MELLEN GRANITE

The Eastern Mellen Intrusive Complex near Mellen, WI, is a 37 km x 6 km gabbroic laccolith that intruded into Lower Precambrian and Upper Keweenawan rock approximately 1.1 billion years ago. Field and laboratory techniques were used to characterize the mineralogy of the Mellen granite in order to determine the petrologic source. The Mellen granite is characterized as a typical granite to alkali feldspar granite. It is noted to have myrmekitic and perthitic textures. Plastic deformation of the Mellen gabbro indicates that it was still hot when intruded by the granite. The Mellen granite was likely formed by partial melting of continental crust.

3:30-4:00

Lounge

Poster

Emily Klug, Junior Biology Major
David Bailey, Assistant Professor of Biology

QUANTIFICATION OF TYROSINE KINASE B (trkB) RECEPTORS IN MALE AND FEMALE ZEBRA FINCH HIPPOCAMPAL NEURONS

Estrogen causes growth of neurons in the central nervous system. One component of estrogen action is brain-derived neurotrophic factor (BDNF), which acts through tyrosine kinase B (trkB) receptors. While trkB is abundant in the mammalian hippocampus (a memory region), few are found in that of the songbird, even though estrogen/BDNF modulate hippocampal activity in these animals. By fixing with acrolein, an abundance of trkB receptors in zebra finch hippocampal neurons has been found. Our current work quantifies hippocampal trkB expression and explores its potentially sexually dimorphic nature as a possible explanation for differences in hippocampal-dependent memory in males and females.



2:00-2:30

Lounge

Poster

Bill Lancelle, Junior Physics and Mathematics Major
Takamasa Takahashi, Assistant Professor of Physics

SEEKING AN ALTERNATIVE TO DARK MATTER: TWEAKING THE INVERSE-SQUARE LAW

While dark matter is the currently accepted explanation for galactic velocity curves, some researchers are still looking for alternative explanations. As one alternative, we investigate the effect of a deviation from the inverse-square law of gravity. We model the Milky Way galaxy as consisting of a spherical bulge surrounded by an infinitesimally thin disk of constant density. Slight variations to the inverse square law are made to see if the velocity curve would change enough to follow observed data more closely.

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Christopher Mader, Senior Psychology Major
Stuart Korshavn, Associate Professor of Psychology

SELF-REFERENCE AND THE ENCODING OF INFORMATION

The view of one's self can have a pronounced affect on several mental processes—memory is one. Referencing an object to one's self can lead to greater remembrance of that object. This investigation tested the hypothesis that self-referencing will have a positive effect on memory and that the effect will be stronger than other methods of encoding information. A group of 17 undergraduate general psychology students completed an unexpected recall task after they heard a list of 40 adjectives. They were then asked to make “yes” or “no” judgments based on four different encoding cues: semantic, phonemic, structural, and self-reference. In support of the hypothesis, the adjectives that were self-referenced were recalled at a greater rate than those encoded using the other cues.

3:00-3:30

Lounge

Demonstration/Performance

Kevin Steiner, Senior Accounting and Economics Major
Kevin Quinn, Associate Dean of Social Science and Professor of Economics

ST. NORBERT PAPER USAGE . . . WHO CARES ABOUT THAT?

The project investigated student printing behaviors before and after a printing policy was enacted for student accounts. A comparative study was performed using balanced panel data from one year before and after the system was enacted to see the implications of the change. The major points of the research were to see 1) how much printing changed, 2) what personal factors attributed to the change, 3) if specific professors or majors caused excessive printing, and 4) how much the College saved with the program. Initial results showed a two-thirds reduction in overall printing after the policy was enacted. Women with a high G.P.A. reduced the most while men with a low G.P.A. reduced the least.



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4:00-4:30

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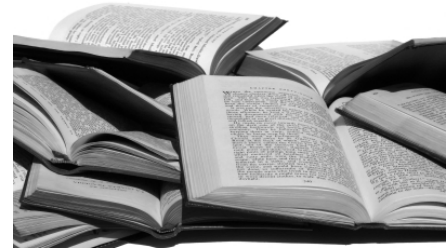
Sarah Lottes, Sophomore Biology Major
Jia Yao, Junior Biology and Chemistry Major
David Bailey, Assistant Professor of Biology
David Hunnicutt, Assistant Professor of Biology

SURVEY OF THE MAJOR BACTERIAL RESIDENTS OF THE ZEBRA FINCH GUT

Zebra finches are important models in neuroscience and endocrinology. These birds display dramatic sexual dimorphisms, specifically in the areas of neurological makeup and hormonal differences. Many of these hormones also have signaling activity in bacteria, and possibly produce variations in the composition of gut flora. Thus, there could be a reciprocal interaction between the bacteria in the digestive system and hormones of the endocrine system, in turn affecting nervous system structure and function. However, the bacterial population of the zebra finch gut is unknown. Using 16S rRNA gene sequencing, we have identified several bacterial species (*Micrococcus luteus*, *Staphylococcus aureus*, *Bacillus cereus*, *Enterococcus faecalis*, and *Variovorax paradoxus*) and noted qualitative differences between males and females. This study is the first step in investigating this unexamined interaction between these two domains of life.

Never regard study as a duty, but as the enviable opportunity
to learn to know the liberating influence of beauty in the realm
of the spirit for your own personal joy and to the profit of
the community to which your later work belongs.

- Albert Einstein



3:00-3:30

Work of Art

Jeanne M. Godschalx Gallery—Bush Art Center

Marcus Wendricks, Freshman Art Major

James Neilson, Assistant Professor of Art

TATTARRATTAT

Tattarrattat is a mixed-media sculpture composed of an abandoned door (the sacristy door of the former St. Boniface church in De Pere), thousands of nails and paper clips, and books that were removed from the collection of the St. Norbert College library. All of the books were considered “obsolete” and therefore no longer useful to the community. The title of the work was inspired by a word coined by James Joyce in the novel, *Ulysses*, and is meant to describe a knock on the door (“I was just beginning to yawn with nerves thinking he was trying to make a fool of me when I knew his tattarrattat at the door.”). *Tattarrattat* is also the longest palindrome in the English dictionary.

We have interpreted *tattarrattat* with these various objects in order to suggest a force that exists from the broken, yet hopeful beauty, of objects that were condemned to the dumpster and are of no ordinary notice. The title gives name to the very action that made the piece come into existence; the constant hammering and pounding of nails into encyclopedias on an old oak door. The “*tattarrattating*” was deeply harmonic and melodic...and very, very loud! This work hopes to represent and reveal something about the nature of both books and doors, and how they act as a gateway or portal to another world. The juxtaposition of vertical and horizontal lines that naturally arise from the wings (the book covers) of the piece seek to elongate the liminality that exists between the spaces of one world into another. Like drops of silver rain, paperclips are affixed to the pages of the books, giving the work what we hope is an “eloquent authority” that ignites the imagination of the viewer.

2:00-3:00

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Brienne Oehlke, Senior Biology Major
Deborah Anderson, Associate Professor of Biology

**TAXONOMIC REVISION AND INTRASPECIFIC VARIATION OF
PARAMYS (RODENTIA; ISCHYROMYIDAE) AN EARLY MIDDLE
EOCENE RODENT FROM THE BIGHORN AND
BRIDGER BASINS, WYOMING**

While working towards revising the alpha taxonomy of the genus *Paramys*, a fossil rodent genus of the Ischyromyidae, we discovered changes in size and morphology in each of two sympatric species: *Paramys delicatus* and *P. delicatior*. Specimens of the two species from both the Bighorn and Bridger Basins increase in size over time, coincident with cooling of the local climate. Morphological changes include an increase in crenulations over time, primarily in the Bridger specimens. By documenting these size and morphology changes in specimens from these two distinct geographic regions, we are facilitating taxonomic identification of specimens recovered in the future.

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Ashley Ash, Senior Biology Major
David Bailey, Assistant Professor of Biology

**THE EFFECT OF CORTICOSTERONE TREATMENT ON
HIPPOCAMPAL CELL DEATH AND SPATIAL MEMORY
IN ZEBRA FINCHES**

Long-term stress, and the associated stress hormone release, results in neurodegeneration in the hippocampus, a region important in memory. Our previous work indicates that neurons in a specific subdivision of the zebra finch hippocampus are most susceptible to a stress hormone, corticosterone, which suggests a role for it in the modulation of hippocampal-dependent memories in birds. We have labeled neurodegenerative cells in the hippocampus of control birds, and are now determining the extent of cell death induced by corticosterone, and whether this change at the cellular level is correlated with the behavior of the organism in regard to memory deficits.

4:00-4:30

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Chase Brosseau, Junior Biology Major

Anindo Choudhury, Associate Academic Dean and Associate Professor of
Biology and Environmental Science

THE FRESHWATER FISHES OF SOBERANIA NATIONAL PARK, PANAMA, AND THEIR HELMINTH PARASITES

The main objective of this study is to begin an inventory of the freshwater fishes of Soberania National Park, Panama, and their helminth parasites. This region is part of a major biogeographical province of the Central American isthmus and is thought to have played an important role in the historical migration of fishes out of South America in the last 10 million years. The details of this migration remain controversial. The distribution of the fishes and their parasites in this region can provide valuable clues to this history and that of the Great American Biotic Interchange.



4:00-4:30

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Leah Tabbert, Sophomore Political Science and Philosophy Major

Michelle Tichy, Assistant Professor of Education

THE IMPACT OF CONSTRUCTIVE CONTROVERSIES ON THE MORAL DEVELOPMENT OF COLLEGE STUDENTS

We examined the effects of a constructive controversy approach compared with individualistic learning on the moral development of 100 college students. The results indicate that participating in constructive controversy (compared with individualistic learning) resulted in greater moral development, greater ethical skills, higher academic achievement, and more positive attitudes toward competition. These results extend constructive controversy theory as well as Piagetian and social interdependent theories. They also provide guidance as to how discussions of moral dilemmas and conflicts among students should be structured and conducted.

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Stephanie Schauer, Senior Mathematics Major with Secondary Education Certification
Corey Vorland, Senior Mathematics and Computer Science Major
Terry Jo Leiterman, Assistant Professor of Mathematics

**THE INCLUSION OF STOKES DRAG AND SHAPE FACTOR ON A
MODEL FOR A DIATOM, *AULACOSEIRA*, IN TROUT LAKE IN
NORTHERN WISCONSIN**

Aulacoseira is a freshwater diatom which forms log-like colonies. *Aulacoseira*'s growth is determined by a complex, interconnected relationship between water mixing and light availability in the lake. Mixing, generated by turbulent convection, alters the location of *Aulacoseira* within the depth of the lake, consequently altering its ability to obtain light for growth. *Aulacoseira*'s abundance and colony size have been measured at varying depths in Trout Lake in Northern Wisconsin. In previous work, we built a mathematical model which accounted for growth and sinking of the diatom. However, sinking was only qualitatively included. In this work, the model takes a more quantitative approach to including the diatoms' sinking velocity, which is not well known in the biological field.

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Stefanie Domrois, Junior Geology Major
Melissa Patz, Junior Geology Major
Tim Flood, Professor of Geology

**THE ORIGIN OF TEXTURES IN A 1.1 BILLION YEAR OLD
GRANITIC PEGMATITE NEAR MELLEN, WI**

A variety of textures occur in granitic pegmatitic dikes that cut through 1.1 billion year old igneous rocks associated with the mid-continent rift near Mellen, WI. This study attempts to explain the presence of graphic, myrmekitic, and perthitic textures that formed during original cooling of the rock as well as other textures associated with hydrothermal alteration. The basis for this study includes hand samples, thin sections, and geochemistry. We conclude that the formation textures are consistent with eutectic crystallization and subsolidus exsolution. The secondary textures are consistent with hydrothermal metasomatism.

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Ian Klein, Senior Chemistry Major

Nicole Swanson, Junior Chemistry Major

Kurstan Cunningham, Assistant Professor of Chemistry

THE PHOTOCHEMISTRY OF ASYMMETRIC COPPER(I) PHENANTHROLINES

The luminescent properties of copper(I) phenanthrolines are sensitive to the size of the substituents in the 2 and 9 positions. However, a direct comparison of this steric interaction through a truly homologous series has yet to be presented in the literature. This project compares the steric interaction created by the symmetric ligands having either methyl or isopropyl groups with asymmetric ligand that contains both groups. Our data show the bis-(2-methyl-9-isopropyl-1,10-phenanthroline)copper(I) complex has an emission maximum comparable to the symmetric isopropyl complex without gaining the corresponding increase in

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Matthew Van Lanen, Sophomore Business Administration Major

William Hynes, Professor of Religious Studies and President Emeritus

THE PRINCIPLES OF ENTREPRENEURSHIP

This project will produce a book entitled *The Principles of Entrepreneurship*, laying out about ten principles that characterize successful entrepreneurial activity. So far, approximately 25 leading entrepreneurs have been interviewed, from economic entrepreneurial billionaires to social entrepreneurs who teach others how to become entrepreneurs. They include Steve Demos who invented Silk, George Schmitt who established the cell phone networks that became Verizon, Don Jones who was one of the founders of cable television, Julie Meyer who raised the money for Skype (sold to EBay for \$3.2 billion), Scot Pederson who is the head of Goodwill in northeastern Wisconsin, and Torkin Wakefield who started Bead for Life, which teaches Uganda women beadworkers how to become entrepreneurs. The interviews were taped and have now been transcribed. It is hoped that such a book would be particularly helpful at this time in our nation's history when there is a tremendous need to create jobs.

2:30-3:00

Lounge

Work of Art

Adam Van Fossen, Senior Communication and Media Studies Major
Shane Rocheleau, Assistant Professor of Art

TOGO AND GHANA FOR THE CAMERA

As recipients of a Student-Faculty Development Endowment Fund award from the Office of Faculty Development, we edited photographs from Adam Van Fossen's travels to West Africa. We followed a creative art process, including: identifying the myriad themes present through over 1,200 photographs; creating edits that variously express each theme; making decisions to exclude photographs based on issues of formal merit; clarity of message and conceptual continuity; and, finally, narrowing the cache of images to a coherent few. Currently, our edit includes twenty-five photographs. Following extensive digital work and working through issues of professional presentation, this project will be presented in a solo gallery exhibition later in the semester.

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Cheryl Bonlender, Senior Mathematics Major with Secondary Education Certification
Laura Welsing, Senior Elementary Education and Mathematics Major with
Secondary Education Certification
John Frohlinger, Associate Professor of Mathematics

VARIATION OF THE JOSEPHUS PROBLEM

As the legend goes, Flavius Josephus and his 40 comrade soldiers were trapped in a cave, surrounded by Romans. They chose suicide over capture and decided that they would form a circle and start killing every third man until one remained standing. Now, suppose one of the soldiers picked a sequence of numbers, a_1, a_2, a_3, \dots . Starting at Person 1, eliminate the a_1^{th} person; then, starting at Person $(a_1 + 1)$, eliminate the a_2^{th} person and so on. Who will be the last one standing? We'll investigate the general problem and look for patterns for particular sequences.

